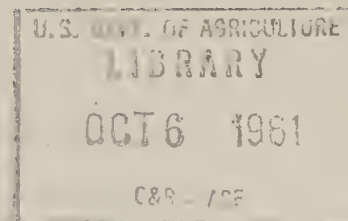


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UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration
Washington 25, D. C.



January 1960
Letter No. 23

Telephone Engineering Information

These information letters are intended to provide a means for answering questions that arise in the field and to inform the field of new developments. They are not intended to be instructions nor to replace in any respect the presently approved channels for establishing requirement and procedures.

TE & CM Sections Distributed Since Letter No. 22

Rev. Section 201, Objectives in Design of Rural Telephone Systems
Add. 3, Section 205, Preparation of an Area Coverage Design
Rev. Section 302, Power Requirements for C.D.O. Equipment
Rev. Section 422, Subscriber Loop Transmission Calculations
Add. 1, Section 640, Design of Buried Plant
Add. 2, Section 690, Joint Use of Poles (for Cable)
New, Section 805, Subscriber Station Protection
New, Section 940, Use of Mobile and Fixed Radio Equipment

TE & CM Sections Now Being Printed

New, Section 641, Construction of Buried Plant
New, Section 822, Carrier Circuit Protection

Revised Cable Splicing Specification PC-2 for Plastic-Insulated, Plastic-Jacketed Cables

This specification, dated October 1959, was issued as an attachment to REA Bulletin 345-6, dated November 6, 1959. The specification gives details for splicing color-coded cables, for mounting ready-access enclosures, and for splicing buried wires and cables. Taped closures are made obsolete.

Dr. Howard M. Trueblood Resigns

Dr. Trueblood, who came to REA in 1952 as the first telephone program consultant, resigned in October by reason of health. He was Dean of the consultants and enjoyed the highest respect of all who had the pleasure of his advice and companionship. His work was of great value to REA particularly in matters relating to transmission, inductive interference and electrical protection. His departure is a very definite loss to REA. It is with great regret that REA personnel view his departure from the organization. His associates in REA have presented him with a suitable token of their friendship and admiration.

Signal Corps Symposium - Color Standards for Insulated Cables and Wires

A paper on Color Standards for Insulated Cables and Wires, co-authored by C. R. Ballard and W. W. Newman, Jr., was presented for REA by C. R. Ballard at the Signal Corps Symposium on Technical Progress in Communication Wires and Cables. This event, held early in December, was the eighth of its kind held annually at Asbury Park, New Jersey. The paper presented the situation that exists at present in the selection of colors and inspection of the product in color coded cables and wires having plastic insulation. The color standards discussed are proposed for use by the entire telephone cable and wire industry. Color standardization was described briefly in the August 1959 Information Letter No. 22.

Mobile Dial Radiotelephone Service

There are 17 Motorola Dial Radiotelephone installations in REA borrowers' systems. Three General Electric field trial installations are under way and service on them is to begin in January 1960. A Lenkurt-Automatic Electric Company system is in the planning stage for a field trial.

Measurement of Transmission Characteristics of Long Span Insulated Aerial Wire Construction

REA transmission engineers have made field measurements on the long span construction at Tyler, Minnesota, on 0.080"-25% Copperply, 0.095"-22% Copperply, and 0.109"-195 steel wires.

Impedance measurements were made on short line sections for the determination of the primary and secondary constants of this type of construction for use in appropriate sections of the manual.

In addition, insertion and crosstalk loss measurements were performed on longer lengths for the evaluation of the suitability of this type of construction for the application of high frequency carrier.

A technical report summarizing the above measurements will be made.

Transistorized Carrier and Repeaters

Field trials of transistorized carrier and repeater equipment mentioned in previous issues of this Information Letter continue to indicate that the annual charges are lower than estimated and considerably lower than vacuum tube equipment.

Revision of REA Cable and Wire Specifications

An industry meeting attended by representatives of all of the manufacturers presently supplying cable and wire to REA borrowers was held with REA representatives in Washington, D. C., December 15 and 16, 1959, to discuss seven draft cable and wire specifications. Constructive suggestions were presented which will be incorporated in revisions of the draft specifications. It is expected that the cable and wire supplied after about September 1, 1960, will be produced under the revised specifications.

Stainless Steel Wood Screws

Stainless steel wood screws purchased for use in REA borrowers' plant in some cases have rusted badly indicating that they are not made of suitable corrosion resistant steel. A letter dated December 10, 1959, was sent to all REA borrowers, consulting engineers, contractors and material distributors stating that page "mw" of the "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers" is being revised to read as follows:

"Wood screws, as required, may be procured from telephone material distributors or suppliers, hardware distributors or suppliers, or prime manufacturers. They shall be of nickel-chrome stainless steel material conforming to the 300 series of corrosion resisting steels in ASTM Designation: A-276 (latest issue)."

The proper stainless steel screws are non-magnetic whereas the improper type can be picked up by a magnet.

Experience with Long Span Insulated Wire Aerial Plant

The field trial long span insulated wire aerial construction at Tyler, Minnesota, was recently subjected to severe ice loading. So far it has performed as it was hoped that it would as explained in Information Letter No. 19, September 1958. The new concept was that the ice-loaded insulated wires would touch ground and that service would be maintained under this condition. This happened and the wires coated with about 1-1/2 inch diameter of ice are on the ground buried deep in snow without affecting service over them. An exception was that one circuit caught on a barbed wire fence and the wind caused it to wear through the wire insulation shorting the circuit effecting service to two subscribers. In the 300 or more miles of this construction serving over 700 subscribers, these two subscribers were the only out-of-service cases as a result of this ice storm. In the same area conventional construction was badly damaged. At this writing the sag, tie and other fixture conditions remain to be evaluated when the ice and snow disappears. Inspection of the lines as they now are show practically no plant damage.

Preformed Deadends for .080 Copper-Steel Conductors

During the past two years REA has received frequent reports of fatigue failures of .080 copper-steel conductors at deadends where compression type deadend bails were employed. REA has evaluated a new type Preformed deadend in the laboratory and in the field under severe vibrating conditions and found it to be entirely satisfactory. This item is now approved as an equal alternate to the present compression deadend bail for use with the .080 copper-steel conductor. REA is presently evaluating new designs of compression deadends to determine their suitability for use.

